

# LITHOLOGIC LOG

Page 1 of 8

LOCATION MAP:

ST-2-466

WELL J

ST-1-473

WW-1-452

WELL ROAD



NTS

SE 1/4 SE 1/4 NW 1/4 SW 1/4 S 32 T 20S R 3E

SITE ID: NASA-WSTF LOCATION ID: ST-2-466

SITE COORDINATES (ft.):

N 229170.17 E 399036.88

GROUND ELEVATION (ft. MSL): 4467.22 (BC)

STATE: NEW MEXICO COUNTY: DOÑA ANA

DRILLING METHOD: Mud & Air-Foam Rotary

DRILLING CONTR.: Larion Drilling Co.

DATE STARTED: 31 July 1989 DATE COMPLETED: 18 August 1989

FIELD REP.: R. Cooper

COMMENTS: 0'-80', 12 1/4" pilot hole reamed to 16" borehole,  
using mud rotary; 10"x79' steel surface casing;

LOCATION DESCRIPTION: 80'-484', 9 7/8" borehole drilled with air-foam rotary, 484'-494' cored. TD = 494'





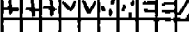









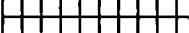









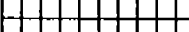



Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description
5	=====+		5	Cuttings (0-484')	0'-270' Clay Rich Alluvium: Moderate brown (5 YR 4/4) to moderate yellow brown (10 YR 5/4) clay rich alluvium. Cuttings in samples range from less than .5 mm to 7 mm (0.02-0.21 inches). The predominate cutting shape is subrounded to rounded grains. Angular cuttings are present in small amounts. Clasts in samples consist mostly of medium gray (N5) to grayish black (N2) limestone and white (N9) iron-stained rhyolite. Other clasts included multiple colors of quartzite, dusky red (5 R 3/4) to dark reddish brown (10 R 3/4) siltstone, light gray (N7) to greenish gray (5 GY 6/1) siltstone, moderate brown (5 YR 4/4) sandstone, grayish orange (10 YR 7/4) caliche.
10	=====+		7		
15	=====+		11		
20	=====+		5		0'-20' Sandy clay - Average cutting size 0.5-1mm (0.02-0.04in) 90% clay.
25	=====+✓		5		20'-25' Gravelly clay, 3-4 mm (0.12-0.16 in) average size up to 12 mm.
30	=====+		4		25'-40' Average cutting size .5-1mm(0.02-0.04 in) 90% clay.
35	=====+		4.5		
40	=====+		3.5		40'-45' Fine-medium grained sandy clay.
45	=====+✓		5		
50	=====+✓		6		45'-50' Medium-grained sand to gravelly clay.

Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description
50				Cuttings (cont'd) 0'-484'	50'-60' Fine to coarse-grained sandy clay.
55			6		
60			6.5		60'-75' Coarse-grained sand to gravelly clay.
65			6		
70			6		
75			6		75'-95' Gravelly-clay.
80			7		
85			8		
90			4		
95			3		95'-100' Average cutting size 2-3 mm (0.08-0.12 in).
100			8		100'-115' Gravelly alluvium with 10% clay. Average cutting size is 4-5 mm (0.16-0.20 in).
105			5		
110			4		
115			4		

Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description
115				Cuttings (cont'd) 0'-484'	115'-130' Medium-grained sand to gravelly clay. Average cutting size 2-3 mm (0.08-0.12 in).
120			4		
125			4		130'-155' Sandy clay.
130			3		
135			4		155'-170' Caliche fragments present in cuttings but <10%; average cutting size 3-4 mm (0.12-0.16 in).
140			4		
145			4		
150			4		
155			3		
160			3		
165			3		
170			3		
175			3.5		
180			3		

Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description
				Cuttings (cont'd) 0'-484'	
180	=====++				180'-185' Caliche fragments present but <10%.
185	=====++v.		5		185'-190' Average cutting size 2-3 mm (0.08-0.12 in).
190	+++++vvv.==		5		190'-210' Gravelly clay, average cutting size 4-5 mm (0.16-0.20 in). Caliche fragments present but <10%.
195	=====++vv.//		8		
200	=====++vv.//		4		
205	=====++vv.//		3		
210	=====++vv.		7.5		210'-220' Sandy clay.
215	=====++		3		
220	=====++		9		220'-225' First sample with moderate pink (5 R 7/4) to light red (5 R 6/6) rhyolite.
225	=====++vv		4		220'-230' Gravelly clay.
230	+++++vvv==.		3		
235	=====++		3		
240	=====++		3		
245	=====++		3		230'-265' Sandy clay.

Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description
				Cuttings (cont'd) 0'-484'	
245					
250			3		
255			3		
260			3		
265			3		
270			4		270'-484' Alluvium (Santa Fe Group): Multicolored cuttings in moderate brown (5 YR 4/4) clay. Cuttings in samples range in size from silt-size to 10 mm (0.4 in). The predominate cutting shape from 270'-455' is subrounded and from 455'-484' is angular. The predominant cutting from 270'-325' is limestone. Igneous cuttings are mostly rhyolite in this interval. Andesite cuttings become more abundant with depth and rhyolite fraction decreases. The formation is a weakly cemented, sandy, pebble to boulder conglomerate. Other cuttings include quartzite, siltstone, sandstone, caliche as described in the above clay-rich alluvium section. Andesite cuttings include, grayish black (N2) aphanitic andesite, dusky red (5 R 3/4) porphyritic andesite with 1-4 mm (0.04-0.16 in) phenocrysts of plagioclase and epidote, and medium gray (N4) porphyritic andesite with 1-4 mm (0.04-0.16 in) phenocrysts of plagioclase.
275			5		
280			3		
285			4		
290			3		
295			7		265'-275' Caliche in cuttings. Many of the caliche cuttings are subrounded to rounded. Pink rhyolite is not present in samples however white iron-stained rhyolite is still present.
300			4		
305			7		280'-290' Clay rich sand and gravel; much less caliche in samples than in samples above; average cutting size 2-3 mm (0.08 - 0.12 in).
310			7		290'-310' Gravel with moderate to small amounts of clay.

Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description
310				Cuttings (cont'd) 0'-484'	310'-315' Clay lens.
315			3		315'-225' Gravelly sand - average cutting size 2-3 mm (0.08-0.12 in).
320			3		
325			5		325' First noticeable occurrence of andesite with pyroxene phenocrysts altered to epidote.
330			6		325'-484' Igneous and carbonate cuttings are the predominant lithologies, however, there are still siltstone, quartzite, sandstone and other various lithologies present in much lesser percentages. Limestone and andesite cuttings are very hard to differentiate because of their similar texture; same dark gray to black color and caliche coatings on andesite effervescing the same as limestone.
335			7		
340			5		
345			6		
350			5		
355			8		
360			7		
365			6		
370			5		
375			8		



Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description
440	✓✓✓✓✓✓✓✓✓✓			Cuttings (cont'd) 0'-484'	
445	✓✓✓✓✓✓✓✓✓✓		5		
450	✓✓✓✓✓✓✓✓✓✓		4		
455	✓✓✓✓✓✓✓✓✓✓		6		455'-484' Cuttings mostly angular indicating larger cobbles or boulders are being cut; average cutting size is 2-3 mm (0.08-0.12 in).
460	✓✓✓✓✓✓✓✓✓✓		5		
465	✓✓✓✓✓✓✓✓✓✓		5		
470	✓✓✓✓✓✓✓✓✓✓		5		
475	✓✓✓✓✓✓✓✓✓✓		11		
480	✓✓✓✓✓✓✓✓✓✓		4		
485	✓✓✓✓✓✓✓✓✓✓		5	Core Interval 484'-494'	484'-494' Alluvial core interval - 5 % recovery (see attached core description).
490	✓✓✓✓✓✓✓✓✓✓				
495	✓✓✓✓✓✓✓✓✓✓				494' Total depth of borehole.
500					
505					